4-YEAR-OLD NEURODEVELOPMENT AND EARLY LIFE DETERMINANTS ARE LONGITUDINALLY ASSOCIATED TO 11-YEAR-OLD ATTENTION FUNCTION

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Background and Aims: Previous studies have found association between cognitive development at 4 years old and several early life determinants such as maternal social class, maternal smoking during pregnancy, being first born, breastfeeding, cord blood DDT levels, indoor levels of NO2, and atopy. This study aimed to assess the association between child neurodevelopment at age 4 and the development of attention function at 11 years. We also aimed to assess the early life determinants related to attention functioning at age 11.
Methods: this study was based on a birth-cohort from Menorca, one of the Balearic Islands of the north-east coast of Spain. At 11 years old, 393 children were assessed with the Conners' Continuous Performance Test – Second Edition (CPT-II). This is a 14-minute computerized measure of inhibitory control, sustained attention, vigilance, reaction time, and response variability. The three outcomes analyzed of CPT-II were Omissions, Comissions and Hit Reaction Time. At 4 years old were assessed the child cognitive development (McCarthy Scales of Infant Development), social competence (California Preschool Social Competence Scale), and Attention Deficit and Hyperactivity Disorder (Diagnostic Criteria of DSM-IV).
Results: all the neurodevelopment outcomes at age 4 were significantly associated to Omissions and Comissions at 11 years. Omissions were associated to paternal education, being first born, atopy at age 4, and child's age, and male children. Paternal social class, child sex, breastfeeding, and DDT levels at age 4 were related with Comissions at 11 years. Finally, maternal social class, child's sex, breastfeeding and DDT levels at age 4 were related with Hit Reaction Time at 11 years.

Conclussions: neurodevelopment measurement during childhood is a good predictor of attention function in preadolescence period. Most of the early life determinants related with general cognition at age 4 were also related with the different components of attention at age 11.